2008 Risk Management Report and Mitigation Strategies

State of Utah, Department of Transportation (UDOT)

Utah Division, Federal Highway Administration (FHWA)

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EXECUTIVE SUMMARY

This report contains the 2008 joint Federal Highway Administration (FHWA) and Utah Department of Transportation (UDOT) joint risk assessment and mitigation tracking. This report outlines the processes that were followed to conduct this year's risk assessment and the resulting conclusions and risk based action items. In addition, this report contains the 2006 and 2007 Risk Assessment action items and their respective status.

The 2008 process, similar to that used in 2007, incorporated a risk evaluation, evaluation of program measures, and professional opinion to identify high risk program elements. A change in 2008 included using a commercially available tool to assist in collecting individual's risk evaluations that allowed greater flexibility to the Program Managers to identify individual program elements for specific raters.

The program analysis provided the following three primary observations: 1) the measured risk level is generally decreasing; 2) the environment and structures program areas have increased in risk; 3) and the "Top 3" highest risk program areas are safety, environment, and right-of-way (ROW).

Within the top three highest risk program areas, the Program Managers have identified mitigation strategies. The mitigation strategy for safety is to review the highway-railroad crossing program and implement the recommendations from the 2007 work zone review. The mitigation strategy for environment is investigate and explore partnering and escalation to decrease the time of processing environmental documents. The mitigation strategy for ROW is to sample and scrutinize limited access requests and ascertain the integrity of the process.

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BACKGROUND

In accordance with the FHWA/UDOT Stewardship and Oversight Agreement, FHWA and UDOT each winter jointly and collaboratively evaluate the performance indicators and assess the current health of the transportation program in Utah. This occurs via a risk management approach to identify and facilitate our work activities. This approach was first used in Utah during the 2007 fiscal year. Since that time, changes have occurred and the process has slightly evolved to improve efficiency and reliability. However, program elements have been identified as high risk and mitigation strategies advanced to minimize the risk associated with the program since its inception.

The primary component of this evaluation has been a joint comprehensive risk assessment. The results of the assessment are used to develop mitigation plan that identifies focus areas and strategies for identified high and low risk items. The mitigation plan will include a list of action items, responsible parties, and due dates for the action. The mitigation plan will be the basis for UDOT, FHWA, and joint UDOT and FHWA activities for the following years.

Risk has several different definitions (i.e. missed opportunity, when the unexpected occurs, or when negative impact occurs). However, for this report we will look at risk defined as the absence of probability of a positive outcome. This constitutes two aspects of the risk analyses. These two aspects are the probability of the event occurring and the outcome of the event or magnitude should it occur.

The probability of an event occurring can be captured with either a quantitative and/or qualitative method. Qualitative methods are methods that invoke subjective interpretation. Quantitative methods invoke statistical approaches of calculating the probability of an event and the resulting absence of probability is the risk. It is quite common to use qualitative evaluation

methods to assign numeric values, followed by quantitative methods of analysis, and concluding with qualitative interpretation of the results for the conclusion.

The data that was used for the qualitative and quantitative analysis for this risk assessment was acquired through means of risk assessment, indicators or measures, and professional opinion. This was the approach used by UDOT and FHWA Program Managers to determine high and low risk transportation program elements in Utah within their respective program areas.

METHODOLOGY

The methodology of performing the risk assessment of Utah's transportation program consists of both data gathering and analysis. Data gathering consisted of a qualitative risk evaluation, quantitative data graphs, and subjective interpretation by UDOT and FHWA Program Managers. Whereas, the analysis portion of the risk assessment consisted of comments, graphs, and professional opinions.

The qualitative risk evaluation of data gathering had two components - developing a survey and analyzing the current measures. A survey was developed to acquire information from individuals (raters) who have knowledge, or should have knowledge based on their position, about specific program elements of Utah's transportation program. Program Managers identified the programs and program elements that were rated. The survey was created too capture a numeric value and comments for different identified probability indicators, magnitude of impact, and interpretations of program compliance measures.

Table 1 Probability indicator and magnitude impact questions

Probability	
Are there sufficient resources (staff and budget) to administer the program?	3 - Insufficient 2 - Somewhat sufficient 1 - Sufficient
Are there experienced trained staff operating and managing the program and/or projects?	3 - Inexperienced 2 - Somewhat experienced 1 - Experienced
Is the subject complex with several interrelated activities?	3 - Numerous interrelated tasks and staff involvement 2 - Some complexity 1 - Relatively straightforward
Are program procedures current and documented?	3 - No documentation 2 - Not current 1 - Current and documented
Has the program been reviewed recently?	3 - Over 10 years 2 - Within 5-10 years 1 - Less than 5 years
Have recommendations from reviews been implemented?	3 - No

	2 - Some 1 – Yes
Is there a history of problems or errors with this program?	3 - Yes 2 - Some 1 - No
Are there special interest groups that influence decisions?	3 - Considerable interest 2 - Some interest 1 - No interest
Magnitude (3 – High, 2 – Medium, 1 – Low)	
What is the potential for waste, fraud, and/or abuse?	
What is the potential to affect public safety?	
What is the potential to stop or delay programs or projects?	
What is the potential to affect congestion?	
What is the potential to affect quality of environment?	
What is the potential to affect the civil rights of others?	

The risk evaluation was administered through a commercially available survey tool (http://www.surveymonkey.com/). This tool provided a stable platform to administer the risk evaluations forum. It also provided greater flexibility to administer the evaluation to a varied audience of raters on the www. The following are some of the enhancements that this tool provided over the 2007 means:

- Ability to send individual program element evaluations to individual raters.
- Presentation of evaluation in a friendly full screen method with comment boxes on all questions.
- Production of evaluation forms was easier as a result of copy/paste features.
- Presentation of graphs with the ability for comments was utilized.

Program Managers and raters performed the risk assessment. The Program Managers were individuals, generally one or two from UDOT and one from FHWA, which had been identified by Management as being the leading knowledgeable person in a the particular program area. The Program Managers were approached to identify other individuals to assist in rating the program risk. Raters were identified by the Program Managers to have valuable knowledge,

skills, and abilities applicable to at least one element within the program they would be rating. Program Managers were also raters within their program area. All raters were contacted by email and invited to complete the internet program element evaluation.

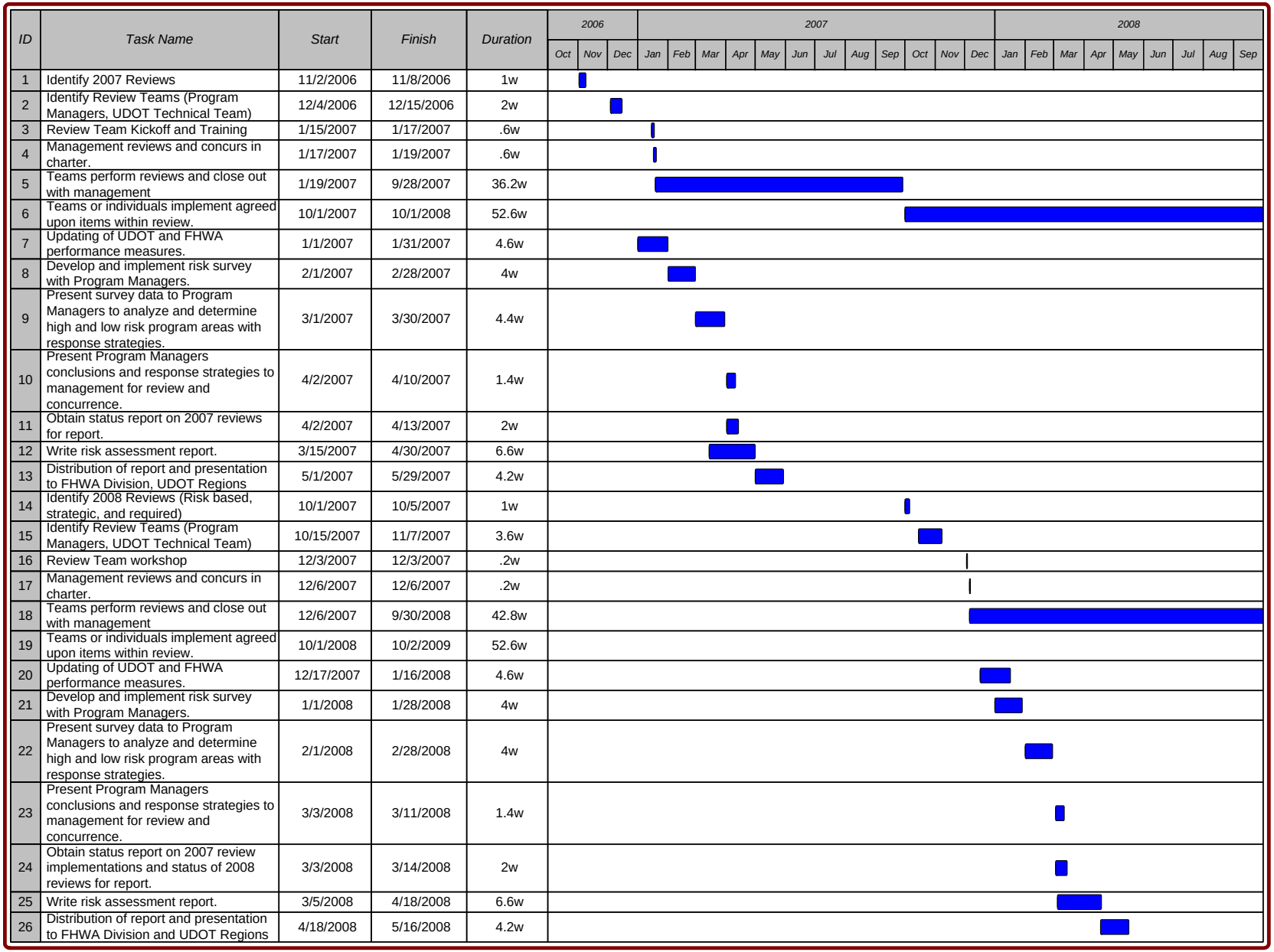
Upon completion of the evaluation, the resulting reports, compiled by surveymonkey ®, were used to perform a statewide analyses and were provided to the Program Managers to assist with their program analysis.

The second component of the risk evaluation was the analysis of the current Stewardship measures. The raters reviewed the surveymonkey ® graphs and provided a written comment regarding their interpretation of the data. If no measure was present, the raters suggested a measure that would benefit in assessing the program's risk.

The Program Managers analyzed the risk assessment data and their program measures. With their analysis and professional knowledge they identified one or two program elements with the highest and lowest risk. In addition, the Program Managers developed response strategies for management consideration.

The risk statements with mitigation strategies were presented to FHWA and UDOT Management. The Program Managers submitted their highest one or two and lowest one or two risk items with their respective response strategy. During the meeting, FHWA and UDOT management developed a response to the Program Managers on how to proceed with their identified activities. The management response included mitigation strategies that will be the basis for the development of the 2009 unit and individual work plans.

Figure 1 presents a time line of the events from the 2007 risk assessment to the completion of the 2008 risk assessment.



ID	Task Name	Start	Finish	Duration
1	Identify 2007 Reviews	11/2/2006	11/8/2006	1w
2	Identify Review Teams (Program Managers, UDOT Technical Team)	12/4/2006	12/15/2006	2w
3	Review Team Kickoff and Training	1/15/2007	1/17/2007	.6w
4	Management reviews and concurs in charter.	1/17/2007	1/19/2007	.6w
5	Teams perform reviews and close out with management	1/19/2007	9/28/2007	36.2w
6	Teams or individuals implement agreed upon items within review.	10/1/2007	10/1/2008	52.6w
7	Updating of UDOT and FHWA performance measures.	1/1/2007	1/31/2007	4.6w
8	Develop and implement risk survey with Program Managers.	2/1/2007	2/28/2007	4w
9	Present survey data to Program Managers to analyze and determine high and low risk program areas with response strategies.	3/1/2007	3/30/2007	4.4w
10	Present Program Managers conclusions and response strategies to management for review and concurrence.	4/2/2007	4/10/2007	1.4w
11	Obtain status report on 2007 reviews for report.	4/2/2007	4/13/2007	2w
12	Write risk assessment report.	3/15/2007	4/30/2007	6.6w
13	Distribution of report and presentation to FHWA Division, UDOT Regions	5/1/2007	5/29/2007	4.2w
14	Identify 2008 Reviews (Risk based, strategic, and required)	10/1/2007	10/5/2007	1w
15	Identify Review Teams (Program Managers, UDOT Technical Team)	10/15/2007	11/7/2007	3.6w
16	Review Team workshop	12/3/2007	12/3/2007	.2w
17	Management reviews and concurs in charter.	12/6/2007	12/6/2007	.2w
18	Teams perform reviews and close out with management	12/6/2007	9/30/2008	42.8w
19	Teams or individuals implement agreed upon items within review.	10/1/2008	10/2/2009	52.6w
20	Updating of UDOT and FHWA performance measures.	12/17/2007	1/16/2008	4.6w
21	Develop and implement risk survey with Program Managers.	1/1/2008	1/28/2008	4w
22	Present survey data to Program Managers to analyze and determine high and low risk program areas with response strategies.	2/1/2008	2/28/2008	4w
23	Present Program Managers conclusions and response strategies to management for review and concurrence.	3/3/2008	3/11/2008	1.4w
24	Obtain status report on 2007 review implementations and status of 2008 reviews for report.	3/3/2008	3/14/2008	2w
25	Write risk assessment report.	3/5/2008	4/18/2008	6.6w
26	Distribution of report and presentation to FHWA Division and UDOT Regions	4/18/2008	5/16/2008	4.2w

Figure 1 Time line of events.

ANALYSIS

The analysis of the survey data and measures consisted of both an overall transportation program and elemental analysis within the program. The program analysis was performed by the authors of this report. The elemental analysis within the program areas was performed by the Program Managers.

Program Analysis

The first step in the program analysis consisted of reviewing the response rates for the survey. Table 2 below shows the response rates for each program area. The number of requested raters was obtained by counting the raters requested for each program element. The number rated was obtained by counting the number of people who rated the risk assessment for the particular program element. The overall response rate for the 2008 risk assessment was 59 % (794/1336) program element requests received responses. Within this response rate, the Structures, Design, and ITS and Traffic programs had the highest response rate (greater than 75%). The Civil Rights, Environment, and Right-of-Way programs had the lowest response rate (less than 47%).

Table 2 Response rate of 2008 risk assessment evaluation

Program	# Requested	# Rated	% Rated
Structures	43	43	100%
Design	148	122	82%
ITS and Traffic	44	33	75%
Safety	131	91	69%
Construction	130	87	67%
Finance	51	33	65%
Pavement and Materials	88	57	65%
Research	33	21	54%
Planning and Programming	151	75	50%
Right-of-Way	158	74	47%
Environment	251	114	45%
Civil Rights	108	44	41%

The second step in the program analysis was to look at how the program's risk changed since the joint 2007 risk assessment. Figure 2 presents a couple trends with the vertical access being risk measured and the horizontal access being the year. The risk measure is a quantitative value that represents the program areas average probability times the magnitude. The graph presents that several of the program areas have decreased risk. However, the safety and environmental programs have increased in risk as compared to 2007. In addition, the right-of-way program risk has relatively remained constant. This was the first year to perform the risk assessment on the civil rights program and such it is only a point in Figure 1.

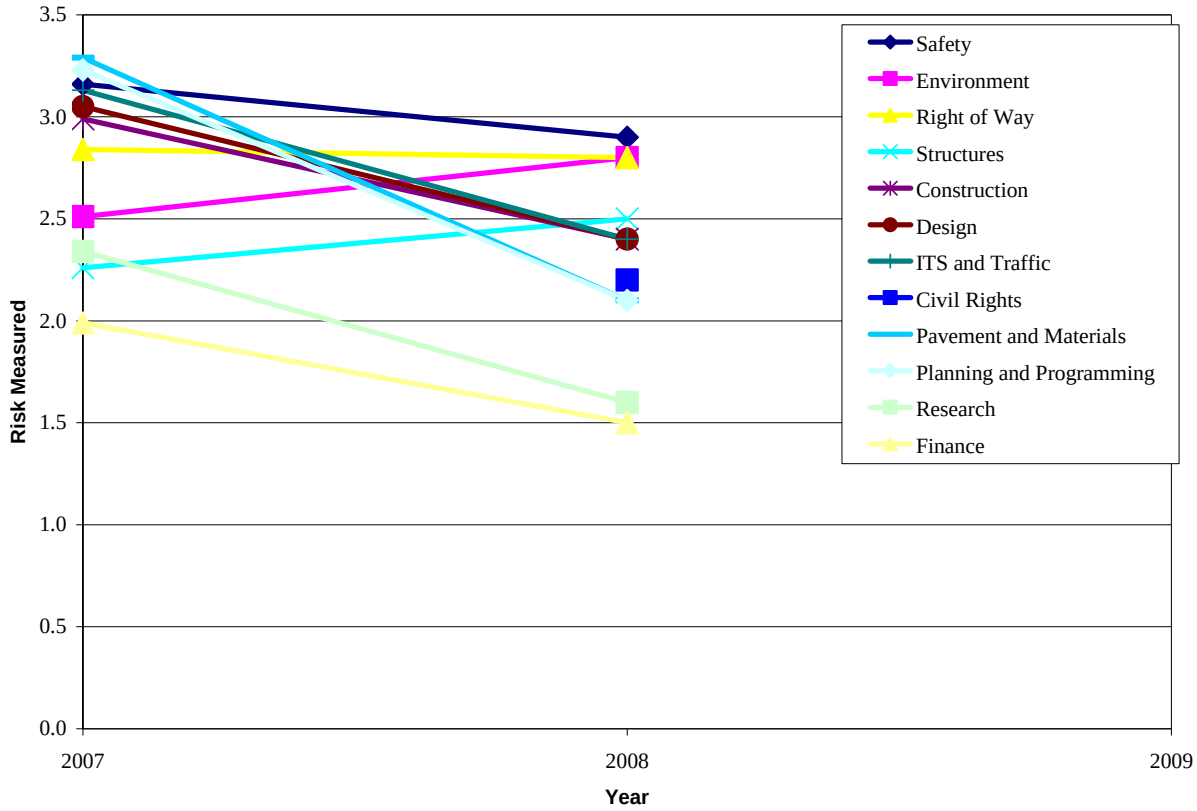


Figure 2 Program risk assessment

The third step in the program analysis process was to determine how the probability indicators changed since the 2007 joint risk assessment (Figure 2). The vertical access represents the overall average of the probability indicator for all programs with the higher the

value the greater the probability of an event occurring. The horizontal access presents the year of the risk assessment. Within Figure 3 it can be observed that the individuals rating the programs believe their jobs overall have become more complex with increased involvement with special interest groups. The other probability indicators have decreased in value. 2008 was the first year to ask raters concerning the implementation of review recommendations.

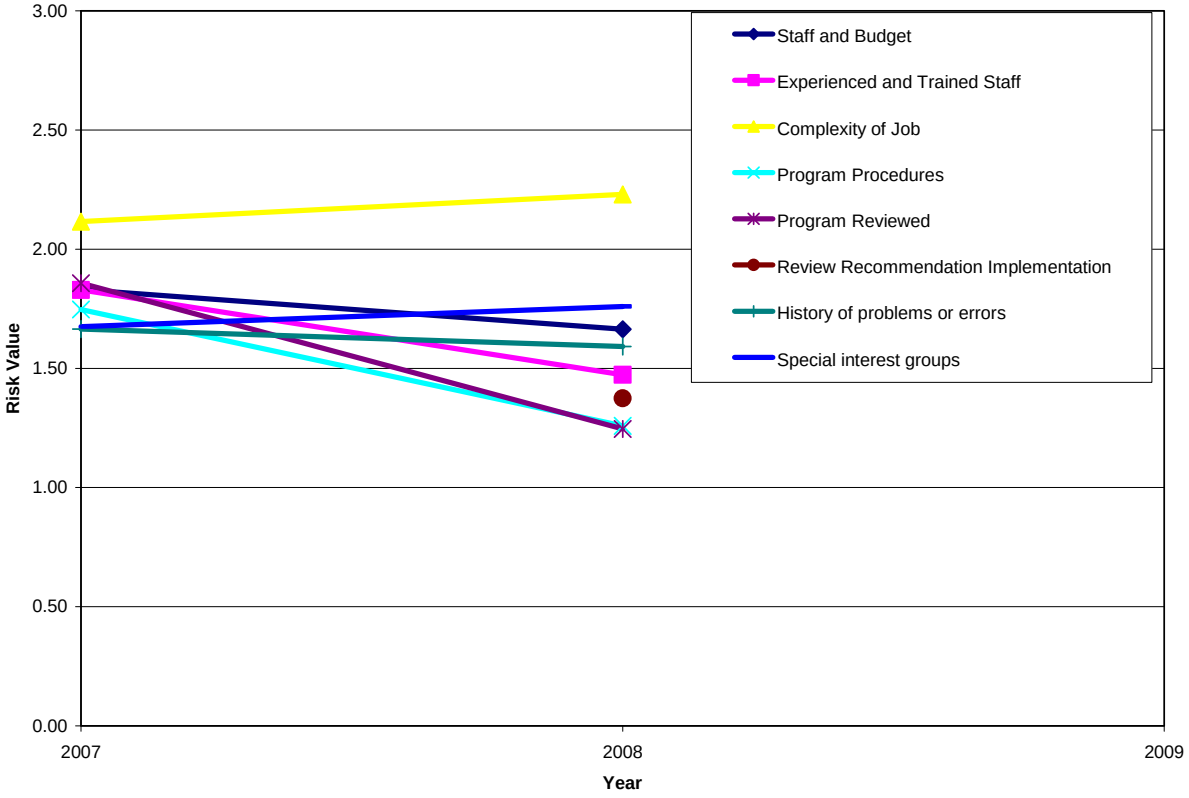


Figure 3 Probability indicatory trends

The fourth step was to determine how the magnitude of an event changed since the 2007 joint risk assessment (Figure 3). The vertical access represents the overall average of the magnitude indicator for all programs with the higher the value the greater the perceived magnitude of an event. The horizontal access represents the year of the risk assessment. Within

Figure 4 it can be observed that the individuals rating the programs believe the impact of the outcomes have remained constant over the past two years.

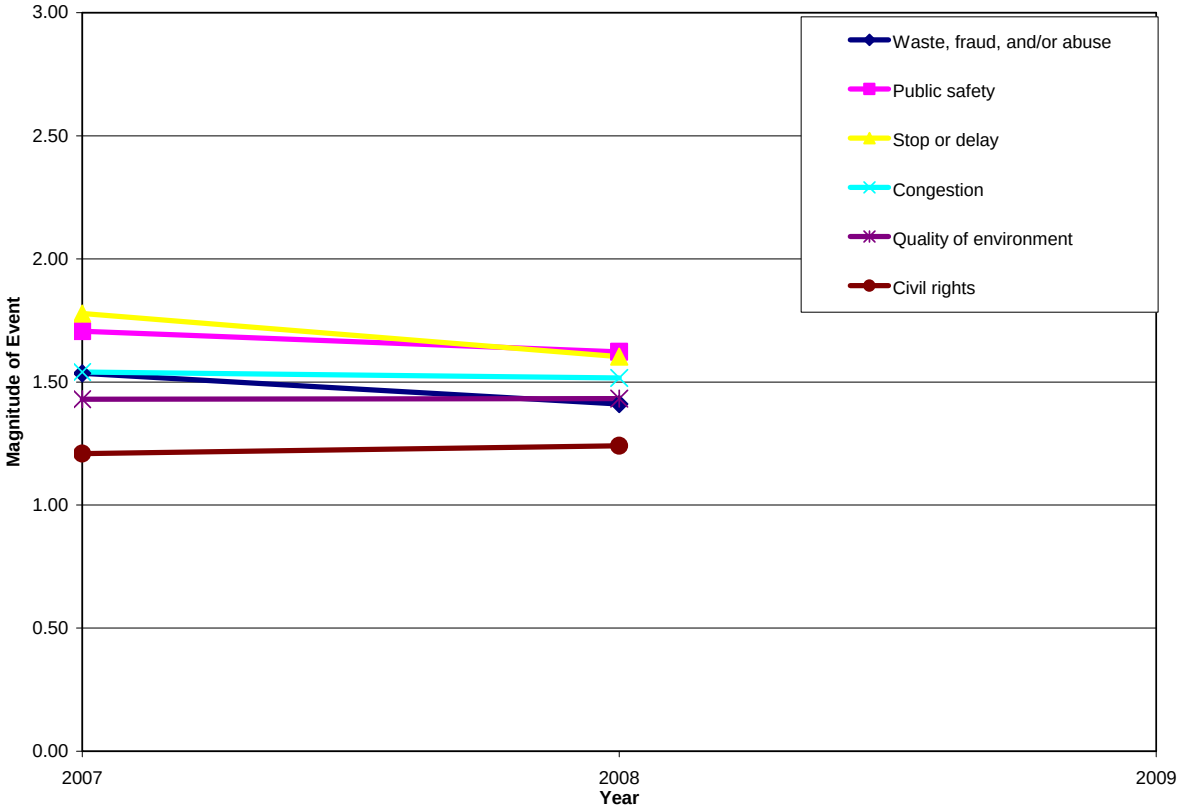


Figure 4 Magnitude of event

Program Element Analysis

At the conclusion of the risk assessment rating, a packet of information was prepared and transmitted to the Program Managers for analysis. The materials supplied consisted of overall instructions on how to analyze the data, respective program area risk assessment results, and instructions to revisit the measures. The Program Managers were then asked to complete their analysis and provide management the highest and lowest one or two statements with their respective response strategies. During this process the Program Managers were asked to

consider events that have a perceived high public expectation, but the probability of the event occurring was relatively low.

The overall provided instruction described the materials in the packet and vague analysis instructions. The analysis instruction asked them to use the data provided, tier performance measures, and their respective professional knowledge to evaluate the risk of the program elements. Table 3 and 4 present the highest and lowest risk statements as determined by the program managers.

Table 3 2008 High risk statements, response

Program Area	2008 High Risk Statements	Managements Comments
Safety, Railroad	**If UDOT does not evaluate the Highway-Railroad Crossing program, then safety at crossings could be impaired.** It has been several years since the Highway-Railroad Crossing program process has been reviewed. **Review the Highway-Railroad Crossing program to develop strategies to improve the obligation rate, design process and construction management. Program measures that will be further explored are railroad funds obligated annually with a goal of 75%, number of active construction projects every 6 months, and number of inactive construction projects for 6, 12, 18 months or longer.**	No comment.
Safety, Work Zone		Implement 2007 Work Zone review recommendations. Identify and populate measures to monitor mobility and safety within Work Zones.
Environment, Process	**If environmental documents take longer to complete than the target timeframe then there is potential to delay projects.** Monitor time between milestones to identify at what point environmental documents are getting behind schedule. Revise procedures to incorporate new technical advisory guidance. **Continue to have training opportunities for staff and consultants.**	Remove action and replace with the following activity: Investigate and explore partnering and escalation to decrease the time of processing environmental documents for State and Federal environmental documents. Prepare a written document for management to review and support your implementation. Decrease decision making time. Establish consensus on way and means to meet targets, established for each project in order to achieve local needs.
ROW, Property	**If the integrity of the UDOT Right of Way Property Management process is not assured, then we are not**	No comment.

Management	**meeting our stewardship or fiscal responsibilities.** UDOT Right of Way has implemented improved processes and procedures to track all purchases of property classified as Severed Tracts (as surplus property not needed for transportation purposes). The processes implemented track all ST parcels from purchase to disposal. **FHWA and UDOT will evaluate the revised processes and procedures to determine whether or not they are; compliant with applicable federal and state regulations and are properly documented in the Right of Way Operations Manual.**	
ROW, Limited Access Line	**Due to the increasingly large number of requests to breach Limited Access facilities the Utah Department of Transportation (UDOT), in partnership with the Federal Highways Administration (FHWA), will evaluate current UDOT policy, procedure and Administrative Code. The FHWA and UDOT will analyze multiple urban and rural Limited Access applications to ensure the processes are; compliant with applicable federal and state regulations, are properly documented in Utah Administrative Code as well as UDOT policy and procedures. The desire outcome is to develop recommendations to enhance the access management policy.**	Please delete the identified mitigation strategy and replace with "Implement recently complete review recommendations to improve integrity and efficiency". Response from ROW – The review that was recently completed was specific to Region 3 and does not address the risk statewide. Team will use review in statewide review. OK
Structures, Design	**If core competency is not maintained through sufficient levels of staff and experience, then UDOT may not be able to ensure the quality of structure designs.** UDOT needs to have the capability to ensure both in-house and consultant structure plans are high-quality designs; inadequate structure designs have a high potential to affect public safety. Currently, approximately 85% of the structure design work is be completed by consultants.	Please include the competencies of the FHWA Division into the activity.

	Effectively tracking core competency is a tool to measure the Division's capabilities.	
Structures, Design	**If the design and operations processes are not updated and understood, then projects could experience unnecessary delays**. Currently a complete design manual is not available for Designers. A manual of instruction/design manual would greatly assist in retaining procedural knowledge for the division. **Create and/or update a manual of instruction for the various tasks performed within the design and operations area.**	No comment.
Construction, Inspection	**If the inspection staff is inexperienced and untrained, then there is potential for incomplete documentation and quality of work.** The potential for using inexperienced personnel increases as the workload increases. **An inspector qualification program will be implemented to assist in getting trained personnel on projects and will decrease the risk of errors.**	Add the development and implementation of a program to remotely monitor construction project.
Construction, Locally Administered Projects	**If staff administering contracts on locally administered projects does not understand federal requirements, then he quality of those projects could be jeopardized along with the funding.** Conduct review of local government projects. Organize training in relation to contract administration and finance for local agencies. Develop and implement a local governments' consultant evaluation form to evaluate consultants' performance. **Prior to construction contract, FHWA and UDOT will hold a general meeting with local governments to review required documentation in order to avoid non-participation of funds and to help them understand their role throughout the construction contract.**	Delete mitigation strategy and replace with "implement findings from recent reviews to address risk."
Design, Interstate Access	**If the FHWA/UDOT cannot efficiently manage new or modified interstate access requests, then Utah's accelerated program of projects could be delayed.**	Management will develop a centralized resource to compliment this activity.

	There are currently a number of new or modified interstate access requests in Utah and regionally in the mountain west that will require the UDOT, FHWA Division and FHWA HQ approval. This element was identified last year as an area of concern, and was among the top concerns identified this year. Interstate access remains an important issue for Utah, the surrounding region and the nation. **Develop and advance the processing procedures to address this workload with new UDOT and FHWA staff.**	
ITS and Operations, Architecture	**If Regional Architectures are not updated, then the likelihood exists that an ITS project could not be identified in any way as being part of an existing architecture.** Since federal funds can only be used for projects coming from a current architecture, this could threaten the use of federal-aid funds for those projects. **It is recommended that we continue to pursue an update to the WFRC and MAG architectures that provide benefit to stakeholders by addressing local issues of concern.**	No comment.
ITS and Operations, Emergency Operations	**If a catastrophic event/incident occurs, then communication breakdowns invariably impact our ability to get timely quality information to effectively act**. Emergency operations, to this degree, are not standard operating procedures and have a low probability of occurring but the magnitude of the event occurring and the potential for a negative response from the public and media are concerning. Additionally, it is difficult to generate interest to train for an event that has a low likelihood of occurrence. Recommend UDOT and FHWA look for opportunities to participate in table-top and simulation exercises. **Develop and maintain internal procedures related to organization that addresses NIMS and the**	No comment.

	Incident Command Structure guidelines.	
ITS and Operations, Operations and Maintenance	**If we continue to build additional infrastructure without the forethought and planning of the future, then we will put ever greater pressure on our ability to operate and particularly maintain these devices at an acceptable level**. Although maintenance budgets are adequate to keep pace with existing infrastructure, continued deployment along with the possibility of reduced or flat budgets could jeopardize our ability to meet public and agency expectations. Furthermore, current federal-aid funds are only eligible for expansion and not O&M. **Recommend continue to measure device availability and use results to maintain an acceptable level of performance. Consider a method to match deployment with the ability to operate and maintain at a defined performance level.**	No comment.
Civil Rights, Title VI	**If the Civil Rights Title VI Program is not instituted in Utah, then the civil rights of others may be infringed upon intentionally or unintentionally.** This would lead to program and projects being stopped as courts review and issue judgment. This includes the program and projects of sub-recipients. This was brought to the attention of UDOT Management in a program self-assessment performed in 2007. **At this point in time, UDOT Management has determined to perform no action and thus the Program Managers have no action.**	No comment.
Pavement and Materials, Pavement Management	**If the Pavement Management System strategies are not followed, then system maintenance costs will increase exponentially.** Because of funding challenges in the pavement preservation program, UDOT's ability to follow those strategies is limited. Develop strategies to help UDOT make a case for dedicated pavement preservation funding. **UDOT and FHWA will work together to**	QIT under development to advance initiative.

	research and market pavement preservation practices that will help to reduce costs and work with financing mechanisms to support pavement preservation.	
Pavement and Materials, Agency Sampling and Testing	**If we do not assure the quality and integrity of the agencies material sampling and testing, then we will not know the value of the materials we are purchasing.** In the past documentation of sampling, testing and acceptance has been inadequate. Considerable effort has been made over the last year to improve project documentation, including training and internal (UDOT) process reviews. **Follow up on these efforts by utilizing UDOT's ongoing process reviews to identify the effectiveness of their efforts to improve documentation. Include local agency sponsored projects in this review.**	Focus on implementing recommendations. No new review.
Planning, Air Quality Conformity	**If air quality conformity for the new Ozone 8-hour and PM 2.5 standards cannot be achieved in Non-Attainment Areas in Utah, then capacity increasing projects in those areas will not be allowed to proceed to construction.** The effective date of the final designations for PM 2.5 is expected in April of 2009. Conformity without budgets (build/no build test) is required one year from that date or April 2010. SIP budgets would be due three years from designation or April of 2012. The effective dates for the new Ozone 8 hour standard would be expected one year later than each of the corresponding PM 2.5 dates. This year (FY2008) the partners of the Interagency Consultation Team have met and interacted to assure that there is an understanding of the various deadlines. We have also educated UDOT concerning the conformity requirements in the future for project implementation purposes. We have worked with the MPOS to evaluate current plans and programs against the new standards. We will also have two training sessions in	Implement 2008 developed mitigation plan.

	the 3rd and 4th quarters of FY2008 to assure current up-to date information is universally understood. There is a current belief that current plans and programs will pass the build/no build tests, when SIP budgets become effective for PM2.5 in 2012 and 8-hour ozone budgets in 2013. UDOT will need to adjust implementation schedules for the next full plan update due in 2010. **In FY 2009 the ICT will work with UDOT to determine optimum scheduling of projects in upcoming plans and programs. We will also work with CMPO (PM2.5 & Ozone) and DMPO (Ozone), who are first time non-attainment MPOs to assist them with meeting the requirements of air quality conformity.**	
Planning, Travel Forecasting	**If statewide and MPO Travel Demand Models are not consistently developed and updated to reflect the latest accepted methods, then projects will likely be delayed due to court challenges.** This past year a process was developed for consistently applying models in the state of Utah. This was accomplished by: 1. Developing a consistent process for travel demand modeling at the project and corridor levels. 2. Developing an MOU for how UDOT and the MPOs can share resources. 3. Developing a proposal for the Travel Demand Model Improvement Program (TMIP) which would provide an expert outside review of the process. **In FY 2009, the TMIP review will take place and the process review team will work with CMPOs and DMPOs to update their models to assure statewide consistency and defensibility.**	No comment.
Planning,	**If the process for developing the Financial Plan in the**	No comment.

STIP/TIP Development	**STIP/TIP is not documented and does not clearly demonstrate how the STIP/TIP can be implemented, then the integrity of the fiscally constrained program may be questioned by both the public and the approving agencies.** This area showed the greatest disparity between magnitude and probability. The main concern is one of demonstrating fiscal constraint. Currently a comfort level is achieved through a series of discussions between the two agencies and reaching an agreement on the assumptions upon which the determination of fiscal constraint is made. **It is currently on the performance plan of the Director of Programs at UDOT to document this process so that it can be replicated consistently in the future. It is anticipated that this activity will be completed prior to July 1, 2008.**	
Research, LTAP	**If we do not provide a sound LTAP program, then local governments would be unable to complete some essential technical functions with unbiased technical support and guidance.** This program is essential to the successful completion of local government engineering projects. **We propose to verify the satisfaction of the contractor's performance by surveying the customers, using an independent provider. We propose the contract will be renewed annually or biannually based on the contractor's performance.**	No comment.

Table 4 2008 Low risk statements, response strategies, and managements' comments

Program Area	2008 Low Risk Statements
Finance, Federal-aid Billing System	**The FHWA/State DOT has accounting and billing system, internal controls, system security comply with applicable requirements (i.e. GAAP, CMIA, etc) for producing a reliable Federal-aid billing. FMIS and FINET perform internal edits keeping errors to a minimum and are easily resolved.** Upgrades will continually be made to ensure efficiency between the systems.
Finance, Cost Accounting System - FINET	**The State DOT has recently upgraded the FINET software to include the ability to track project finance activity by project phase or funding type.** The upgrade has simplified the Federal Billing process by eliminating duplicate data entry. The FINET system reporting capability has been enhanced by the addition of COGNOS (data warehouse tool). UDOT will continually work to simplify the process of effectively tracking Federal dollars within the State and federal systems
Design, Consultant Selection and Administration	**Design consultant selection and administering existing tier one measures show that past actions taken to ensure adherence to pool cap limits are being enforced indicates that consultant services has control over the program as a whole.** Consultant administration and selection scored low on the analysis of design risk elements. The surveyed group showed little concern over the direction and performance of this portion of the program. Continue to monitor.
Design, Contract Time	**Past performance of our project delivery based on existing tier one measure for design show that we are meeting our project delivery goals for the majority of our program. Design contract time produced the lowest scores in both probability and magnitude of all elements considered.** In general respondents were very comfortable with the programs results in providing adequate contract time for design projects. In addition to the recorded low scores, contract time determination is relatively less risky to the delivery of FHWA and UDOT's program when compared to the other elements of the design program. From our experience and observations those projects that are delayed in advertisement are much more likely to be impacted by another facet of preconstruction work such as COOPS, utility coordination and row clearance. Continue to monitor.
Construction, Buy America	**It isn't unusual for this item to be low risk for the construction program.** The construction program has and continues to follow the Buy America Act. The knowledge of the Buy America Act is continually discussed and passed on to new personnel.
Construction, Contractor Qualifications	**UDOT has a system in place that evaluates contractor qualifications prior to bidding.** Furthermore, UDOT has higher standards with regards to required training and certification.
Environment, Water Quality, Storm Water	**UDOT has been successful in preventing issues and violations with the use of the SWPP packet for each project that is advertised.** Continue to monitor.

Environment, Erosion Control	**Erosion control issues have a low likelihood of delaying our program of projects.** There have been very few issues/problems in the last year. Continue to monitor and hold Environmental Control Supervisory classes.
Planning, Highway Statistics	**If Highway Statistics are not reviewed as described by law in a timely and accurate manner Utah's annual apportionment will minimally be affected based on previous reviews that resulted in no significant findings or corrections.** The many statistical areas of interest have established reviews that are conducted, in many cases, annually, but at least triennially. These reviews are conducted by the Division and Headquarters and adjustments to the program are addressed in a timely manner. The magnitude of the consequences for reviews not being submitted on time or for reviews containing inaccuracies is not considered to be of high risk. The Highway Performance Monitoring System (HPMS) Review has historically involved an annual field review of sample HPMS sites in various regions of the state. Preparation for, conduct of, and documentation for this review has been time intensive. **Consideration should be given, based on risk, to eliminate the field portion of the review and/or change the frequency of the HPMS review to every two years.**
Planning, Highway Statistics	**If public road mileage is not accurately functionally classified in a timely manner some roads providing higher mobility will not be eligible for federal funding.** The State conducts a wholesale reassessment of the functional classification of all of its public road mileage every ten years after the release of the census and the changes to urban area boundaries. The next wholesale update will occur around 2013-2014 timeframe. Amendments in between wholesale updates are infrequent and generally consist of changing minor routes that are of a class not eligible for federal-aid to a class that is. There is a general percentage range for each functional class so federal-aid eligibility is not abused. Also it does not affect the overall funding. This area is considered to be of low risk for these reasons. **We will do nothing until 2012.**

STATUS OF RISK MITIGATION ACTION ITEMS

It is necessary that all risk mitigation strategies from previous risk assessments are completed. Table 5 presents previous years identified risk statements with the status of the mitigation strategy. Within the Risk Event column is the year the risk event was identified; therefore, the proposed action year is the subsequent year. Within the Status column is a statement of 'ongoing' or 'completed.' Once an activity is complete and reported as such in the annual risk assessment, it will no longer be tracked in future year's risk assessments

Table 5 Status of previous year's risk mitigation activities

Program	Risk Event	Proposed Action	Status
Bridge Ops - National Bridge Inventory Inspection	2007 - The number of "up close, arms length" inspections decreases due to the volume of bridges needing inspection. Without an "up close" inspection, small problematic details can be overlooked.	Continue implementation of UDOT Bridge Inspection QC/QA process. Use consultants to perform bridge inspections on complex bridges and bridges with fracture critical details.	{Completed} April 1, 2008 - UDOT and consultant inspectors performed bridge inspections during Q4 2007; all backlogged scheduled bridge inspections were completed.
Bridge Ops - HBP Eligibility	2007 - Due to decreased funding in the HB Program, temporary and emergency repairs were made (e.g. shoring) when the structure should have been replaced or completely rehabilitated.	1. Seek supplemental federal bridge funds through discretionary programs and special programs; 2. Seek State funds through legislative line items and special request. 3. FHWA - Area Engineers perform three joint bridge inventory inspections with UDOT.	{Ongoing} April 2, 2008 - 1. Researched availability of supplemental bridge funds; determined no supplemental bridge funds were available from discretionary programs. 2. Determined that the 2008 State Legislature did not approve additional State funds for bridges. 3. As of April 2, '08, one Area Engineer has performed a joint bridge inspection; two other Area Engineers are scheduled to perform inspection during the Spring '08.

Construction - Locally Administered Projects	2006 - May be a lack of UDOT project oversight	Review stewardship and compliance indicators to assess focus areas of attention for further review on locally administered projects	{Complete} April 1, 2008 - Reviewed stewardship and compliance indicators and began discussion with UDOT administration
Construction - Locally Administered Projects	2007 - Continuation from 2006 Risk Event	1. Conduct process review on local government projects in compliance with State and Federal regulations. 2. Continue FHWA training. 3. Develop / implement local government's consultant evaluation form.	{On-going} April 1, 2008 - Joint UDOT/FHWA process review team drafted a charter and is developing surveys to evaluate the LPA process and adherence to the current UDOT manual.
Construction - Construction Records Documentation	2007 - Documentation/Inspection documents need to provide more detailed documentation on work completed tied to bid items and schedule.	1. Standardize construction records documentation throughout UDOT. 2. Evaluate construction records documentation. 3. Address the quality of work performed and identify potential problems or issues.	{Complete} April 1, 2008 - This activity has been reclassified as implementation rather than a review. This activity is implementing the findings identified in the 2007 reviews of supporting documentation and processing of contractor billings and payments, and the 2007 review of final inspection and acceptance of projects.
Design - Consultant Selection & Administration	2006 - Increased use of consultants and reliance upon consultants for management level decisions	Provide training to UDOT PMs to facilitate a better understanding of the consultant contracting process	{Completed} April 1, 2008 - Provided OMB Circular A87 and A123 training to UDOT, MPO, and FHWA Division staff. Conducted informal training for Consultant Services staff, PM's, and other field staff regarding consultant contracting. Assisted UDOT in developing a procedure to identify candidate projects for the SEP-14 approved CMGC procurement mechanism.

Design - Locally Administered Projects	2007 - Risk events occur when inexperienced local officials and consultants require more time and intervention from UDOT project management in the delivery process than UDOT is prepared to provide.	1. Review cooperative agreements and update as needed. 2. FHWA to participate in 5 Locally Administered PS&E project reviews.	{Ongoing} April 7, 2008 - 1. Formed a State QIT team, including a FHWA representative. Recommended modifications to the standard cooperative agreement, clarifying responsibilities. UDOT management accepted the recommendations. 2. FHWA participated in 3 of the 5 planned reviews, with one additional review scheduled in the near future.
Design - Design Traffic Analysis	2007 - High complexity and high probability for traffic congestion	Review results of Risk Assessment Survey with responders to ensure all responses were based on the same interpretation.	{On-going} April 7, 2008. 1. Reviewing results of Risk Assessment Survey.
Design - New Interstate Access	2007 - The Access Management Policy and FHWA Policy on interstate access is ill-defined and appears not to be understood by UDOT.	1. FHWA will develop strategy for at least 28 interchange modifications currently in process in Utah. 2. Utah FHWA office will work for required approvals.	{Completed} April 1, 2008 - 1. Coordination occurred with FHWA HQ and the Resource Center (RC) to meet Utah's emergency needs. Utah FHWA office fully employed two RC staff and provided early involvement with FHWA HQ. 2. Utah office also proposed within Resource Sharing Proposal a solution that would expedite the process and likely provide for greater expertise.
Environment - Environmental Processes	2006 - High turnover of UDOT and FHWA environmental staff	Organize and schedule training requested from the Resource Center	{Ongoing} April 1, 2008 - Completed five of the eight identified training courses; the remaining three are on hold.
Environment - Environmental Processes	2007 - If there are outdated procedures and lack of understanding of new changes to procedures, then the preparation of documents will be delayed.	1. Update Environmental Process Manual; Incorporate SAFETEA changes in the process. 2. Provide 6002 changes training. 3. Distribute Revised Process with well defined roles and responsibilities of each step of the	{Completed} April 4, 2008 - 1. Updated EIS/EA process. 2. Incorporated SAFETEA-LU changes into the EIS process. 3. Defined and posted to the UDOT website the roles and responsibilities in the EIS process; distribution will be accomplished by May 1, 2008.

		process.	
Environment - Interagency Coordination	2006 - High turn-over of UDOT and FHWA environmental staff	Update procedures for processing environmental documents. Include training various agencies	{Ongoing} April 1, 2008 - Procedure Updates: No activity; Training: Of the eight identified training courses, five are completed, three on hold
Environment - Environmental Stewardship	2007 - If the Resource Agencies continue to take a long time to respond due to lack of resources, experience, and knowledge of procedures, then the delivery of documents will be delayed.	1. Identify Resource Agencies early in the NEPA process. 2. Keep Resource Agencies informed of the project's progress. 2. Ensure Representative of Resource Agency has decision authority. 3. Notify Resource Agencies of potential issues. 4. Continue coordination throughout project. 5. Monitor performance to measure success.	{Ongoing} April 1, 2008 - 5. Created a Stewardship Measure. Measure shows EA's/EIS's ahead or behind schedule, median timeframes, and number of projects with DeMinimis.
Finance - Locally Administered Projects	2007 - Need more efficient Project Delivery	1. Combine with Design, Locally Administered Projects; 2. Train Local and State officials to insure efficient use of Local Government funds; 3. Acquire additional staff and resources to expand use of consultants	{Ongoing} April 2, 2008 - 2. Matthew Swapp, LG Engineer, is touring Utah to train and insure efficient use of funds. 3. Additional staff requirements/resources is being discussed.
Finance - Major Project Reporting	2007 - Lack of understanding 23CFR	Seek support from the FHWA and UDOT management to develop understanding in 23CFR	{Completed} April 2, 2008 - FHWA individual recently completed a 23CFR course and will begin advising UDOT personnel. Two major projects have begun and reports were developed.
ITS and Traffic - Emergency Ops Training	2007 - Need Emergency Transportation Operations training	Locate funding for Emergency Transportation Operations training and planning	{Ongoing} April 8, 2008 - Researching possible additional funding. Participated in a few internal and interagency training exercises. Scheduled

			additional training Sep '08.
ITS and Traffic - Integrated Corridor Management	2007 - Need interagency plans for corridor management	Recommend State Traffic Management Committee develop interagency plans for specific corridors	{Ongoing} April 1, 2008 - The Traffic Management Committee is addressing this long term risk to develop long term agreements with local jurisdictions. Implemented signal timing agreements with the City of Salt Lake.
ITS and Traffic - Regional Architecture	2007 - Need to define relationship between regional architectures and the planning process	1. Recommend Traffic Management Committee discuss architecture. 2. Recommend MPO certification address relationship between regional architectures and planning process	{Completed} April 8, 2008 - 1. Discussed regional architectures at Traffic Management Committee meeting. 2. Addressed regional architectures during Mountainland Association of Governments (MAG) certification review.
Materials & Pavements - Independent Assurance	2007 - Independence Assurance is not occurring, causing technicians & labs to lose their certification	1. Conduct program review of the IA program to identify issues and make recommendations. 2. Establish a measure as a result of the review	{Completed} April 1, 2008 - 2. Created a Stewardship Measure for CY 2006 and 2007 Projects. The measure provides the percent of projects meeting expectations in MS&T, documentation present, exceptions reported, certified personnel, and binder samples correct. Two of the five measured items (certified personnel and binder samples correct) met or exceeded the 90% goal.
Materials & Pavements - Agency Testing & Sampling	2007 - Use of unqualified staff by private consultants; lack of qualified staff within the industry	1. Conduct market analysis to determine if there are qualified consultant resources. 2. Review UDOTs process for qualifying consultant sampling, testing labs, and personnel. 3. Take appropriate action based on outcome of market analysis and program review.	{Ongoing} April 4, 2008 - Initiated a market analysis and UDOT process review. Completed approximately 90% of the data collection and 25% of analysis.

Planning - Traffic Forecasting	2007 - There is a need for unity and quality in Utah's traffic modeling forecasting process	1. Develop an unvaried traffic modeling forecasting process for Utah (MPO, UDOT, UTA, FHWA, FHA). 2. FHWA perform an IA peer review	{Ongoing} April 2, 2008 - 1. Created a joint task force (MPO, FHWA, UDOT, UTA) to address the risk issue for travel demand modeling. The goal is to develop a process/checklist that will assist in developing an unvaried traffic modeling forecasting model by the end of the fiscal year. 2. UDOT is submitting an application to FHWA for a peer review of the modeling coordination process.
Planning - Air Quality	2007 - Need to implement recent regulations related to the 2.5 particulate standard and 8-hr ozone requirements	Develop an implementation and contingency plan through the Interagency consultant Team	{Ongoing} April 2, 2008 - Scheduled an interagency consultation team meeting for April 29, '08. Developed schedules identifying the earliest date Utah will be ready to demonstrate conformity for both PM 2.5 and 8-hr Ozone requirements.
Planning - Planning and NEPA Process	2007 - Need to have timely processing of NEPA documents when project is planned	Develop and monitor performance measure	{Ongoing} April 4, 2008 - Scheduled an April 8th meeting to discuss timely processing of NEPA documents.
Planning - Congestion	2007 - Need prioritization, funding, and mode of transportation to minimize congestion	Develop and monitor performance measure	{Ongoing} April 1, 2008 - Determined that "Congestion" requires a definition for each affected locality.
Research - Progress of Projects	2007 - Contractor not completing projects on time and on budget	1. Prepare database to assess project's progress; 2. Review the use of other management tools to assess project's progress; 3. Avoid contracts with entities that are historically late	{Ongoing} April 2, 2008 - 1. Completed inputting all project information in the database; information is easily accessible for review. Currently populating the database with expenditures. 2. Conducting quarterly progress meetings to review each project's progress. All projects are in a spreadsheet showing all actions on the projects. 3. Scheduled a review for new

			contracts to remove any historically chronically late PI's.
Research - LTAP	2007 - Insufficient manpower to review the progress and efficiency of the program	1. Require contractor to perform a customer survey to assess their performance. 2. Check contractor contract scope of work against completed work. 3. Make objectives and scope task oriented. 4. Conduct program review of LTAP program	{Ongoing} April 4, 2008 - 1. An LTAP contractor performed a customer survey to assess his performance. 2. Checked the contractor's performance against the project's scope of work. 3. Working on an RFQ and new contract to make the project task oriented. 4. Completed the LTAP program review.
ROW - Acquisition & Appraisal	2006 - Limited oversight of the Local Public Agency (LPA)	Determine implementation level of 2006 Review recommendations	{Completed} April 1, 2008 - Implemented the FY06 FIRE Review recommendations. Supporting advancement of recommendations.
ROW - Relocation Assistance	2006 - Consultants performing this assistance with limited direct involvement	Verify that consultants and LPAs have capacity to manage the Relocation Assistance process	{Ongoing} April 1, 2008 - Organized process review team. Prepared questionnaire to interview LPAs. Assigned team member responsibilities to complete process review.
ROW - Relocation Assistance	2007 - Continuation of 2006 Risk Assessment	Need FHWA/UDOT partnership in NHI training to LPAs; Need process review in LPA relocations assistance over the last 5 years	{Ongoing} April 2, 2008 - Conducted Process Review. Analysis of training needs is in process.
ROW - Property Management	2006 - Accuracy of newly acquired employee and GIS to assist in managing acquired property for future projects is unknown	Conduct joint FHWA/ROW/UDOT Finance property management review to assess accuracy of information in UDOT's GIS database	{Cancelled} April 1, 2008 - Element reassessed and not considered high risk. Used resources on higher priority effort.

ROW - Property Management	2007 - Continuation of 2006 Risk Assessment	Need to track the rental of acquired properties and the inventory of property not used for highway project	{Completed} April 2, 2008 - Tracking, via Stewardship Measure, the rental of acquired properties. FHWA review of property management processes is scheduled for 2009.
Safety - Focused Safety Programs	2006 - A unified strategy does not exist for countermeasures addressing road departure crashes	Work with the Safety Leadership Team to develop Strategic Highway Safety Plan	{Completed} April 1, 2008 - Developed draft "Rumble Strip Policy". Performed Road Safety Audits on 294 of the 570 miles of roadway. Installed cable guardrails for a mile of US 189 in Provo Canyon. Reviewed locations for warning signs.
Safety - Strategic Highway Safety Program	2006 - A Strategic Highway Safety Plan does not exist	Finalize and implement the UDOTs Strategic Highway Safety Plan	{Ongoing} April 1, 2008 - Coordinated with Robert Hull. Attended Strategic Highway Safety Plan Peer to Peer in San Diego. Attended Utah Safety Summit planning meeting. Continuing to organize and conduct a Safety Summit.
Safety - Project Development	2007 - Need to insure safety involvement in project development	Implement design exception audits, operational safety report audits, at the end of the project	{Ongoing} April 4, 2008 - Developed scope of work for OSR's; will have this completed by a consultant engineering firm; expect to have the consultant identified and working in the next few months.
Transportation System Preservation - Programming & Finance	2006 - UDOT new staff are not familiar with 23CFR630 requirements for agreement balances	Provide training to UDOT staff and PMs on 23CFR630 requirements	{Completed} April 1, 2008 - Completed training to UDOT staff and PM on 23CFR630 requirements.

CONCLUSION

The 2008 risk assessment process included quantitative and qualitative analysis of information - collected in several different means. It brought together Program Managers and individuals with in-depth knowledge of the programs to insure the integrity and efficiency of the Utah's transportation program. The conclusions of this risk assessment are comprised in the 2008 statewide program analysis, individual program analysis, and the ability of the Program Managers to successfully mitigate risk.

The statewide program analysis looked at current risk trends compared to the 2007 risk assessment. The statewide programs indicated generally risk is decreasing, with the exception of the increasing risk in the Safety and Environment program areas. A review of the probability indicators demonstrated that overall probability is decreasing, with the exception of an increase in complexity and special interest groups. A review of the magnitudes associated with the risk assessment, generally demonstrated no change.

The analysis performed within the program areas was conducted by the Program Managers, who identified an array of tools to assist them in mitigating their 20 high risk items. The mitigation strategies included marketing efforts, training, reviews, and establishing measures to monitor the program's performance to gain a better understanding.

The final component of the 2008 risk assessment is the progress of implementing previous year mitigation strategies. Currently there are twenty-one existing activities ongoing; though some of the ongoing activities are multi-year mitigation strategies. UDOT and FHWA have completed 13 mitigation strategies since the inception of this joint risk assessment approach. There was one activity that was cancelled due to diminishing risk.